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JACOBSON HOLMAN PLLC
400 SEVENTH STREET N.W.
SUITE 600
WASHINGTON, DC 20004

EXAMINER

RODRIGUEZ, PAUL L

ART UNIT

PAPER NUMBER

2125

DATE MAILED: 10/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/548,661

Applicant(s)

O'DONNELL ET AL.

Examiner

Paul L Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/13/00, 7/7/00, 8/15/00, 8/24/00.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-41 are presented for examination.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings are objected to because:

Figure 2 labels the three six sided elements as MC1 and only labels the combination of C1-C3 as MC and not MC1.

Page 10 line 31-32 states "...assembly MC2, each I/O ports is connected to at least two cells", cell 8 is only connected to one I/O port.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 6-10. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The examiner has provided a number of examples of the drawing deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these

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as examples of deficiencies and should make all the necessary corrections to eliminate the drawing objections.

Specification

6. The disclosure is objected to because of the following informalities:

Page 9 line 16 states "C5 has a data logging function", figure 4 shows the function of C5 as "Debugging Function".

Page 10 line 10-11 state "...I/O ports of the plant unit P4 are identified by the reference numbers 6 to 10", figure 6 does not label reference numbers 6-10.

Page 10 line 19 refers to "master station 1", previously just "master station...MS1", reference number 1 was used to identify as "master communication link".

Page 10 line 29-32 discusses the cell connection to P4, with reference to the I/O ports 6 and 7 however they are not labeled with reference numbers.

Page 10 line 31-32 states "...assembly MC2, each I/O ports is connected to at least two cells", cell 8 is only connected to one I/O port.

Page 11 line 12 states "Each cell would have sufficient of the distributed...", language is broken, unclear what is meant by sufficient, sufficient what?

Appropriate correction is required.

7. The examiner has provided a number of examples of the specification deficiencies in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as examples of deficiencies and should make all the necessary corrections to eliminate the specification objections.

Claim Objections

8. Claims 1-33, 35, 36 and 39-41 are objected to because of the following informalities:

Claims 1-33, 36 and 40 are objected to for their use of acronyms "RTU" and "I/O" in the claims. Although the acronym I/O is synonymous with "input/output", the acronym RTU is not well known. Because there is no definition of the acronyms in the claims, these claims are considered indefinite, even though the acronyms are defined in the specification.

Claims 7-9, and 21-23 claim "the status", would be better claimed as "a status" to avoid a possible antecedent problem.

Claim 12 line 2 states, "the continuous downloading", should be "a continuous downloading" to avoid a possible antecedent problem.

Claim 33 line 7 and claim 36 line 7 recite "...of a system function one or more of the cells", language is broken, recommend stating "...of a system function to one or more..."

Claim 35 lines 4-5 recite language that is unclear and is considered indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner assumes that the claims are directed toward redundant processing however it is unclear from the claim language.

Claim 39 states "the malfunction", would be better claimed as "a malfunction" to avoid a possible antecedent problem.

Claim 41 lines 4-5 recite language that is unclear and is considered indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner assumes that the claims are directed toward redundant processing however it is unclear from the claim language.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 17, 20, 27, 31 and 36-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the control function" in claim 13 line 1. There is insufficient antecedent basis for this limitation in the claim. Previously "data control function", unclear if this is referring to a different control function.

Claim 17 recites the limitation "the networks" in claim 17 line 2. There is insufficient antecedent basis for this limitation in the claim. Previously claimed "a dual communication network" which is considered a single network.

Claim 20 recites the limitation "the control functions" in claim 20 line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 27 recites the limitation "the control function" in claim 27 line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 31 recites the limitation "the networks" in claim 31 line 2. There is insufficient antecedent basis for this limitation in the claim. Previously claimed "a dual communication network" which is considered a single network.

Claim 36 recites the limitation "the database" in claim 36 line 17. There is insufficient antecedent basis for this limitation in the claim.

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10. Due to the number of 35 USC § 112 second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s), however, the list of rejections may not be all inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all the necessary corrections to eliminate the 35 USC § 112 second paragraph problems and place the claims in a proper format.

11. Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-7, 10-12, 14, 15, 19-21, 24-26, 28, 29, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Pomatto (U.S. Pat 5,517,423). The claimed invention reads on Pomatto as follows:

Pomatto discloses (claim 1, 19) an RTU assembly (figure 2, figure 4) for controlling a system (col. 1 lines 56-67), including plant units (col. 5 lines 56-61, reference numbers 114, 116 connected to reference numbers 100-100C), each having an Input/Output (I/O) port (for the RTU

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reference numbers 254, figure 4, col. 8 lines 19-39), and carrying out a system function (col. 3 line 48-col. 4 line 9) comprising communication means (reference number 102, col. 3 line 59 – col. 4 line 9), a plurality of cells (reference numbers 100-100C) interconnected by the communication means (col. 4 lines 10-24), each cell comprising a microprocessor (reference number 200 figure 3), a power supply (reference number 130 figure 3), a memory for storage of data (reference numbers 160, 161 figure 3) and an I/O port for reception and transmission of data from a plant unit of the system and/or other cells (reference number 172, figure 3, col. 5 lines 55-61), each of said cells being programmed to be independently operable to carry out at least part of any function of the system (col. 5 lines 22-32), at least some of said cells being programmed to have a data control function to configure and re-configure each cell to perform at least part of different system functions (col. 5 lines 23-32, col. 6 lines 8-21), each of said cells being programmed to enable its data control function to source data from and to make data available to other cells as required (col. 2 lines 1-7, col. 4 lines 10-24, col. 10 lines 36-50), (claims 2-5, 19) comprising a distributed database for storage of system functions and a program for the processing of such functions (col. 5 lines 23-32, col. 13 lines 15-25, each RTU and RDU contain memory for the programming and control of that unit, figure 1, abstract refer to “distributed intelligence”, examiner considers this combination as a distributed database), for the storage of the program to carry out the data control functions (col. 13 lines 15-25), and for the storage of the system function if any being carried out by each cell (col. 5 lines 23-32), (claim 6, 20) in which the control functions are stored in the memory (col. 5 lines 23-32, col. 13 lines 15-25), (claim 7, 21), in which each cell is programmed for continually updating the status, data requirements and system function being carried out by itself (col. 5 lines 33-48), (claim 10, 24)

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in which the data control function is programmed into one dedicated cell (col. 5 lines 23-48), (claim 11, 25) in which the data control function is programmed into at least two dedicated cells (col. 2 lines 34-37, examiner considers the statement that each RDU can be assigned a function, therefore two cells can be programmed this way), (claim 12, 26) in which each cell is programmed for the continuous downloading of information to other cells (col. 10 lines 36-49), (claim 14, 28) in which the data control function is programmed to provide a unique identifier for each cell when transmitting data (col. 7 lines 4-6), (claim 15, 29), in which each cell is programmed to identify data appropriate for that cell so as to only accept that data for subsequent processing (col. 10 lines 51-67), (claim 33) a method of controlling a system (col. 1 lines 9-11, 56-67) including plant units (col. 5 lines 56-61, reference numbers 114, 116 connected to reference numbers 100-100C), each having an I/O port (reference number 172 is I/O to other units, reference number 190 is I/O to plant units, figure 3), and carrying out a system function (col. 5 lines 22-32), the control method using an RTU assembly (figure 2) having a plurality of cells (reference numbers 100-100C) communicating with each other (col. 4 lines 10-19), each cell comprising a microprocessor (reference number 200, figure 3), a power supply (reference number 130 figure 3), a memory for storage of data (reference numbers 160, 161, figure 3), and an I/O port for reception and transmission of data from a plant unit of the system (reference number 190) and or other cells (col. 5 lines 22-32), comprising the initial steps of allocating at least part of a system function one or more of the cells (col. 5 lines 22-32), and allocating a data control function of configuring or re-configuring the system function carried out by each cell (col. 6 lines 8-21, col. 5 lines 23-32) and in which during operation of the method the continuous steps are carried out of operating each cell independently to source data from and to make data

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available to other cells as required (col. 2 lines 1-7, col. 4 lines 10-24, col. 10 lines 36-50), re-configuring the system function carried out by any cell during operation of the method dependent on control requirements (col. 6 lines 8-21) (claim 34), in which there is compiled a distributed database for storage of system functions (abstract, figure 1, distributed system, RTU and RDU have their own memory for storage of programming, distributed), a program for processing of said system functions (col. 5 lines 23-32, col. 13 lines 15-25), a program for carrying out the data control functions (col. 13 lines 15-25), and for the storage of the system function, if any, being carried out by each cell (col. 5 lines 23-32).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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15. Claims 8, 9, 22, 23, 36-39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pomatto (U.S. Pat 5,517,423) in view of Nelson et al (U.S. Pat 6,018,449).

Pomatto teaches most all of the instant invention as applied to claims 1, 19 and 33 above. Pomatto fails to teach (claim 8, 22) in which each cell is programmed for continually updating the status, data requirements and system function being carried out by each other cell (claim 9, 23) in which each cell is programmed for continually updating the status, data requirements and system function being carried out by each other cell and itself (claim 36) on replacing a cell of the RTU assembly the system function carried by the replaced cell is allocated to the replacing cell or another cell by reference to the database and the database is updated (claim 37) in which on a cell malfunctioning the steps are performed of allocating the system function carried by the malfunctioning cell to one or more of the other cells and updating the database, (claim 38) in which each system function is allocated to at least two cells and (claim 39) in which the data control function is allocated to at least two cells whereby the malfunction of a cell does not prevent operation of the data control function.

Nelson et al teaches (claim 8, 22) in which each cell is programmed for continually updating the status, data requirements and system function being carried out by each other cell (col. 2 lines 16-44), (claim 9, 23) in which each cell is programmed for continually updating the status, data requirements and system function being carried out by each other cell and itself (col. 2 lines 16-44), (claim 36) on replacing a cell of the RTU assembly the system function carried by the replaced cell is allocated to the replacing cell or another cell by reference to the database and the database is updated (col. 1 lines 59-67), (claim 37) in which on a cell malfunctioning the steps are performed of allocating the system function carried by the malfunctioning cell to one or

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more of the other cells and updating the database (col. 2 lines 17-44), (claim 38) in which each system function is allocated to at least two cells (col. 6 lines 19-29, if one node fails, all others will attempt to perform its function) and (claim 39) in which the data control function is allocated to at least two cells whereby the malfunction of a cell does not prevent operation of the data control function (col. 6 lines 19-29).

Pomatto and Nelson et al are analogous art because they are both related to the distributed control of a system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the shared node status of Nelson et al in the distributed control system of Pomatto because Nelson et al teaches a distributed system in which nodes can be easily added, subtracted or reconfigured to maximize the number of system users (col. 1 lines 59-67), this provides system flexibility and ease of configuration.

16. Claims 13, 16, 27, 30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pomatto (U.S. Pat 5,517,423) in view of Cook et al (U.S. Pat 5,966,304).

Pomatto teaches most all of the instant invention as applied to claims 1, 19 and 33 above. Pomatto fails to teach (claim 13, 27) in which the control function is so programmed that on a cell malfunction occurring it causes all data being inputted to the malfunctioning cell to be sent to another cell or cells and for that other cell or cells to carry out the system function previously carried out by the malfunctioning cell in a seamless manner, (claim 16, 30) in which more than one cell is connected to the same I/O port of a plant unit (claim 35) in which at least two cells are programmed to receive and process the same data for subsequent onward transmission, all of the

cells except one of the cells being programmed to reject the data for processing until the cell processing the data ceases to do so when another of the cells will process the data.

Cook et al teaches (claim 13, 27) in which the control function is so programmed that on a cell malfunction occurring it causes all data being inputted to the malfunctioning cell to be sent to another cell or cells and for that other cell or cells to carry out the system function previously carried out by the malfunctioning cell in a seamless manner (abstract, col. 2 lines 21-40, 47-52), (claim 16, 30) in which more than one cell is connected to the same I/O port of a plant unit (col. 4 lines 5-13, both 12a and 12b are connected to the same I/O port 22), (claim 35) in which at least two cells are programmed to receive and process the same data for subsequent onward transmission (reference numbers 12a and 12b), all of the cells except one of the cells being programmed to reject the data for processing until the cell processing the data ceases to do so when another of the cells will process the data (col. 2 lines 21-40, 47-52).

Pomatto and Cook et al are analogous art because they are both related to distributed control of a system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the redundant controllers of Cook et al in the distributed control system of Pomatto because Cook et al teaches a simple replacement of old modules without disruption to the system (col. 2 lines 41-46) and redundant controlling elements that provide normal operation in the event of a problem with the primary controller (abstract).

17. Claims 17, 18, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pomatto (U.S. Pat 5,517,423) in view of Burns et al (U.S. Pat 6,047,222).

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Pomatto teaches most all of the instant invention as applied to claims 1 and 19 above and also teaches the communication means incorporates a dual communication network (col. 8 lines 19-43 “alternatively or in addition”). Pomatto fails to teach (claims 17 and 31) in which the communications means incorporates a dual communications network and in which one of the networks is redundant except on malfunction of the other and (claim 18, 32) in which each cell has a dual redundant power supply.

Burns et al teaches (claims 17 and 31) in which the communications means incorporates a dual communications network and in which one of the networks is redundant except on malfunction of the other (abstract) and (claim 18, 32) in which each cell has a dual redundant power supply (abstract, col. 2 lines 45-61, loop-powered).

Pomatto and Burns et al are analogous art because they are both related to a distributed control system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the redundant buses of Burns et al in the distributed control system of Pomatto because Burns et al teaches the advantage that a process control line does not have to be shut down if there is a loss of primary power or communications (col. 3 lines 63-67), maintaining operation even during a casualty to the system.

18. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pomatto (U.S. Pat 5,517,423) in view of Nelson et al (U.S. Pat 6,018,449) as applied to claim 36 above, and further in view of Cook et al (U.S. Pat 5,966,304).

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Pomatto as modified by Nelson et al teaches a distributed control system with shared node status as recited in claim 36 for the reasons above, differing from the invention as recited in claim 41 in that their combined teaching lacks (claim 41) in which at least two cells are programmed to receive and process the same data for subsequent onward transmission, all of the cells except one of the cells being programmed to reject the data for processing until the cell processing the data ceases to do so when another of the cells will process the data.

Cook et al teaches (claim 41) in which at least two cells are programmed to receive and process the same data for subsequent onward transmission (reference numbers 12a and 12b), all of the cells except one of the cells being programmed to reject the data for processing until the cell processing the data ceases to do so when another of the cells will process the data (col. 2 lines 21-40, 47-52).

Pomatto as modified by Nelson et al and Cook et al are analogous art because they are both related to the distributed control of a system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the redundant controllers of Cook et al in the distributed control system of Pomatto as modified by Nelson et al because Cook et al teaches a simple replacement of old modules without disruption to the system (col. 2 lines 41-46) and redundant controlling elements that provide normal operation in the event of a problem with the primary controller (abstract).

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Lem et al (U.S. Pat 5,984,498) – teaches a distributed control system with multiple controllers (RTUs) that communicate information between and among the controllers for processing information and modifying the operations of the device.

Stute et al (U.S. Pat 5,485,142) – teaches a system of Remote Terminal Units that uses backup power to maintain the system.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L Rodriguez whose telephone number is (703) 305-7399. The examiner can normally be reached on 6:30 - 4:00 M-Th and alternate F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

Paul L Rodriguez
Examiner
Art Unit 2125


MARIA N. VON BUHR
PRIMARY EXAMINER

PLR
September 25, 2002